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ABSTRACT

This issue of the newsletter of the American Association for the Advancement of Science (AAAS) presents articles relating to minorities in engineering, declining enrollment, introducing metric, descriptions of 1976 high school graduates, child understanding, and hand calculators in schools. Articles presented relating to higher education include chemistry by television, personalized system of instruction (PSI), the Sea Grant program, and a handbook for faculty development. Reviews of recent meetings, new journals, publications, and opportunities are included. (SI)

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OCT 14 1976

SCIENCE EDUCATION NEWS

American Association for the Advancement of Science



U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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September 1976

The Schools

Minorities in Engineering

The Minorities in Engineering Project of the National Coordinating Center for Curriculum Development (NCCCD) at the State University of New York at Stony Brook has the objective of contributing to the nationwide effort to bring the number of minority engineering students up to parity with the population distribution in the college ages. The activity at the center focuses on secondary schools, with the goals of (a) better understanding by students, teachers, and parents of the nature of modern engineering work; and (b) better preparation of college-bound students for entry into quantitatively oriented higher education if they choose such a direction.

It is hoped that efforts at the center, combined with those already under way throughout the country, will impact both the quality and character of secondary education. The staff of the center recognizes that such a goal is attainable only by limiting the number of schools and students to a size consistent with the resources committed nationally to the problem.

Accordingly, the focus of the center will be initially restricted to schools of reasonable size and with a significant minority population. Secondly, attention will be concentrated on students in the academic, college-bound programs. Both restrictions, narrowing concern to a small group of the 35,000 secondary schools and to a small population within those schools, result from the desire for the program to have an impact within the next decade even though the long-term amelioration of the problem of minorities in engineering should be addressed in terms of fundamental social change and should include a strong emphasis on small, rural schools.

To start the program the center conducted a two-month workshop in the summer of 1976 involving participants from eight cities with on-going programs. Engineering faculty members from participating colleges or consortia and teachers from appropriate high schools worked at Stony Brook on the preparation of appropriate materials for four target-audiences—secondary school teachers, students, families of students, and administrators and guidance personnel. Just over 30 people were involved in the summer effort, including a small group experienced in curriculum development.

During the 1976-77 academic year the materials developed during the summer will be evaluated in actual school settings. In addition, the development of curriculum materials and the expansion of experimentation with local engineering-school interactions will continue. Regular meetings will be held throughout the year to exchange information on the experimentation and develop documentation for the project's newsletters and publications. From *P.T.S. Newsletter* (Summer 1976), Program on Technology and Society, College of Engineering and Applied Sciences, State University of New York, Stony Brook 11794.

Shrinking Schools

At a conference in Washington, D.C., 24 men and women from across the U.S. discussed the problem of declining enrollments in elementary schools and made recommendations for softening the impact of such a decline. Participants included several superintendents of schools, teachers, business people, consultants, a congressman, and others. A full report of their findings and conclusions appears in *Shrinking Schools*, an occasional paper of the Institute for the Development of Educational Activities (I D E A), available from I D E A, Mail Orders, P.O. Box 628, Dayton, Ohio 45419. \$2.00 a copy.

Metric—Go!

Schools all over the United States are showing a growing awareness of the need to teach more metric. Every state has begun some type of state-level activity to introduce metric. Textbook publishers and producers of other educational materials are aware of this and are beginning to respond with a countless number and a wide variety of teaching aids.

Thirty-two states have had some type of formal action by their state legislatures and or state school boards. Twenty-two school boards have adopted "go metric" resolutions. In Alaska and Texas the state boards directed their state education departments to plan the change; in California the state superintendent of public instruction announced the change; in Arizona, the state board of education adopted a "Metric Education Plan" for the state; in New York, the state commissioner of education requested a changeover to metric in the schools and the state legislature enacted resolutions calling for conversion; in New Mexico the state board

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of education adopted a position paper calling for the schools to teach metric.—For further information write to Jeffrey V. Odom, Metric Information Office, National Bureau of Standards, Washington, D.C. 20234.

High School Seniors Described

A report describing the educational plans, curricular interests, test scores, and academic and extracurricular achievements of one million 1976 high school graduates was released in September 1976 by the College Entrance Examination Board of New York. The students described in the report, entitled *College-Bound Seniors, 1975-76*, represent one-third of all 1976 high school graduates and approximately two-thirds of all freshmen who will enter college this fall. Highlights of the report show:

- The SAT verbal average of the high school graduates dropped three points and the mathematical average remained the same as the previous year. Seniors in 1976 earned more scores above 600 than 1975 seniors on both the verbal and mathematical sections of the SAT.
- For the second consecutive year there are more women than men in the population, and for the first time since 1972, the percentage of minority students is up from a virtually constant 14 percent to 15 percent.
- Compared to their predecessors, the 1976 senior class seems to be more interested in health sciences—particularly pre-medicine and nursing. Nearly a quarter of the women intend to major in health-related areas and 13 percent in education; of the men, 16 percent intend to major in engineering and 14 percent in business and commerce.
- Forty-six percent of the men and 36 percent of the women plan to complete a B.A. degree; the percentage of women aspiring to a Ph.D. increased more rapidly than that of men for the third consecutive year.
- The number of seniors in honors courses nearly doubled for all academic areas between 1973 and 1976; about 60 percent of the graduates, up 8 percent since 1973, plan to apply for advanced placement, course credit, or exemptions from required courses in college.
- The average of seniors' grades in six subject areas is 3.12 or B. Women had higher grade averages than men except in mathematics and physical sciences, but men's grades have been increasing about twice as fast as women's over the last four years.

Copies of *College-Bound Seniors, 1975-76* are available from the College Board, Department PA, 888 Seventh Avenue, New York, New York 10019.

News from BICP

The Biomedical Interdisciplinary Curriculum Project (BICP) will hold information workshops in November and December 1976. Workshops include an overview of BICP's mathematics, science, and social science curricula, its

biomedical practicum, and the status of BICP dissemination and implementation.

Also available from BICP are an implementation manual for high school personnel, a working manual for those who wish to establish a health careers practicum program, a biomedical instrumentation package (BIP) programmed for student use, a new BIP manual, and a computer manual (to be ready in mid-October).

BICP's purpose is to develop and disseminate a two-year interdisciplinary precollege curriculum that prepares high school students for entry into training programs leading to a career in the health field.

For more details write: BICP, 1537 Webster Street, Oakland, California 94612.

Looking at Children Differently

How different is a child's understanding of the world from an adult's understanding of the

world? How different is a child's view from what an adult thinks is the child's view?

William Kessen and Katherine Nelson, researchers at Yale University, are addressing questions like these. They find that even the youngest children have a remarkably organized and detailed view of their environment. The child's understanding is not an immature language cognitive system which requires a maturing into an adult language cognitive system. Rather, the child has a nonverbal, but highly detailed, cognitive "script" for how things should unfold—that is, what happens when grandmother visits, or how to have breakfast with father.

Adults would do well to respect this cognitive ability of the child, especially at moments when the child with a nonverbal world meets the verbal world. Language, too, has its own conventions, rules, and organizations, so that for a child to make the leap from his nonverbal environment to the adult's essentially verbal environment is a major undertaking.

Kessen and Nelson pose provocative questions about this critical transition. Do some children fail to talk because language reflects a different cognitive system from their own? Do some have trouble at this point—and often at a later date in school—because their way to solve problems or to understand the world does not match the way others understand the world through language?

These are important questions because words are important "tools" in life. The researchers, in fact, question the overriding emphasis society puts on verbal ability and wonder whether this stress is leading adults to become less sensitive to what kids, who are not verbally adept, are trying to communicate.

The researchers point out that nonverbal systems are often as useful as language—for example, the system which allows us to understand what a face "says." If we would consider the worth of such nonverbal knowledge, they feel, we could make knowing language less of a make-or-break situation for children. And, they believe, if we respect children who have problems with language for what they do know rather than label them

deficient, we may be better able to determine why they are not verbally proficient.

Both psychologists insist that they are not saying that children, through one cognitive system or another, "know" everything and, like flowers, just need food and water to blossom. Says Kessen, "Clearly we have to teach and put demands on them to do verbal problem solving. What is important is the manner in which adults do it." If we attempt to see the child's view and to appreciate the complexity and subtlety of cognitive organization prior to language, the researchers believe we will be better able to help the child bring together or "connect" the nonverbal and verbal systems. Kessen and Nelson's research is aimed at illuminating what pre-verbal cognitive systems look like.

For further information write William Kessen and Katherine Nelson, Department of Psychology, Yale University, New Haven, Connecticut 06520.

Hand Calculators in School

Electronic Hand Calculators: The Implications for Pre-College Education is the final report of

an NSF-supported project which surveyed the range of beliefs and reactions about calculators. In particular, the study reports the current arguments that are used to support positions strongly favorable and strongly negative toward the use of calculators in elementary and secondary schools.

For more information write Marilyn N. Suydam, Project Director—Electronic Hand Calculator, ERIC Information Analysis Center for Science, Mathematics and Environmental Education, The Ohio State University, 1200 Chambers Road, Columbus, Ohio 43212.

Higher Education

Chemistry Courses by Television

Beginning in the fall of 1976 the Illinois Institute of Technology will offer chemistry courses by television. The university will broadcast live 20 undergraduate and graduate courses, including some in chemistry, for employees in Chicago-area companies. Students view the programs on special television receiving sets that allow them to communicate with their classroom instructors. The courses will be for credit and follow the same format as the conventional classroom courses. So far, seven Chicago-area companies are scheduled to participate in the program.—From *Chemical and Engineering News*, 19 July 1976.

Computer-Based PSI Modules in Science

PSI (Personalized System of Instruction) modules in physics, chemistry, and mathematics which are taught by computer have been written by members of a team consisting of six or seven specialists in each field. The modules consist of a student manual and a teacher's guide for study of a single topic. In physics some of the titles are Circular and Orbital Motion, Wave Motion, Geometrical Optics, Electric Poten-

tial and Fields; in chemistry, Stoichiometry, Solution, Chemical Equilibrium; in mathematics, Numerical Solutions to Ordinary Differential Equations, Mathematical Modelling, Linear Programming, Applications of Taylor Series, Error Analysis, and many others.

Each module starts with a statement of objectives in behavioral form, a list of prerequisites, and a text frequently interrupted with exercises. The text also instructs the student from time to time to "call the program FERMAT" (in optics) or other program, which is then used in the exercises. For further information write to Harold Weinstock, Physics Department, Illinois Institute of Technology, Chicago, Illinois 60616.

Sea Grant Program

The Sea Grant Program in the U.S. Department of Commerce

supports education, training, and research in the fields of marine science, engineering, and related disciplines. The program has four levels or types of funding:

1. *Individual projects.* Grants for one or two years for a specific activity in education, research, or advisory services (dissemination activities). Educational programs at the undergraduate level tend to be marine technician training rather than research or curriculum development.

2. *Coherent projects.* This category requires definite institutional commitment to a multi-project, multidisciplinary program of a unified attack on well-defined local or regional problems in areas where sufficient competence to meet marine needs does not exist. The institution must intend to move toward the third category of:

3. *Institutional support.* Funds are awarded to colleges or universities which have a broad base of competence in marine affairs. The institutions must make a long-range commitment of matching funds, management structures, interdisciplinary research teams, and advisory service mechanisms for strong interaction with marine communities in its region. Not surprisingly, most institutions receiving such support are large state universities.

4. *Sea Grant Colleges.* After three years of institutional support, universities are eligible to be named Sea Grant Colleges. Such a designation indicates a continuing commitment by the Department of Commerce to give priority for funding to these institutions.

For more information, request "The National Sea Grant Program—Program Description and Suggestions for Preparing Proposals" from National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, Maryland 20852; or call Robert Wildman, Associate Director, at (202) 967-4562.—From 6 August 1976 *News Notes*, Federal Resources Advisory Service.

What Is FRAS?

The Federal Resources Advisory Service provides information and assistance regarding federal grants programs for colleges and universities with special emphasis on curricu-

lum, faculty development, and institutional improvement at the undergraduate level. Members of the Association of American Colleges receive this service as part of their membership; nonmembers may subscribe to the newsletter and attend workshops for a nominal fee. The specific services of FRAS include:

1. Publication of *News Notes*, providing information on selected federal programs and other activities of interest. During the 1975-76 academic year, twelve issues of *News Notes* and eight special supplements were published.

2. "Information Sessions," two-day workshops bringing college representatives together with agency staffers from grants programs of special interest. Fall sessions are scheduled for 25 and 26 October and 22 and 23 November 1976. Details and registration forms will be printed in upcoming issues of *News Notes*.

3. Response to general inquiries on sources of funding for institutional and faculty programs. Telephone calls, letters, or visits to AAC offices are welcomed.

4. Individual assistance with projects, proposals, and problems regarding federal grants.

All requests for information and assistance are handled on a first-come, first-served basis. FRAS is not intended to replace direct contact between college representatives and federal agencies but rather to provide the necessary information to make such contacts expeditious.

For information and assistance, contact Kathryn Mohrman, Director, Federal Resources Advisory Service, Association of American Colleges, 1818 R Street, N.W., Washington, D.C. 20009, or call (202) 387-3760.

Nexus-to-Date

Nexus, the comprehensive clearinghouse on innovation in post-secondary education that is operated by the American Association for Higher Education, has begun to disseminate information about post-secondary programs in a new publication, *Nexus-to-Date*. The May/June issue includes information from five institutions that have innovative programs in individualizing large introductory lectures in biology, chemistry, physics, economics, and educational psychology. A year's subscription (six issues) to *Nexus-to-Date* is \$7.50. For further information write to American Association for Higher Education, Suite 780, One Dupont Circle, Washington, D.C. 20036.

Faculty Development Handbook

A Handbook for Faculty Development, by William H. Bergquist and Steven R. Phillips, with Gary H. Quehl the general editor, is in its second printing by the Council for the Advancement of Small Colleges (CASC) and is moving briskly. An initial printing of 3,000 copies this past summer was made possible by a grant from the Shell Companies Foundation, Inc., with income from their sale paying for the new edition.

The *Handbook* combines a discussion of faculty development as a way of improving instructional effective-

ness with an analysis of faculty development as it relates to personal and institutional success. Also provided are detailed discussions of a variety of approaches to instructional, personal, and organizational development together with useful forms.

The *Handbook* is available from the Council for the Advancement of Small Colleges, One Dupont Circle, Suite 750, Washington, D.C. 20036, for \$9.95 (in quantities of 10 or more, \$8.95 each).

Meeting

Man-Environment Impact Conference

An international conference on education and the environment will be held at the Four Seasons Sheraton Hotel, Toronto, Ontario, Canada, 24-27 November 1976. The conference will address the possibilities for integrating the concerns of the environment into the educational process as well as serve as the annual conference of the five sponsoring associations—Science Teachers' Association of Ontario, Ontario Association for Geographic and Environmental Education, Environmental Science Teachers' Association of Ontario, Council of Outdoor Educators of Ontario, and Horticultural Teachers' Association of Ontario.

Educators from all levels will be attending the conference, but the majority of them are likely to be high school teachers. Since the program will attempt to meet the needs of those attending most of the sessions, it will be directed toward the application of both disciplinary and environmental material to the school curriculum. However, some presentations of a more strictly academic nature will be included. For more information write to Craig Copland, Chairperson, Man/Environment/Impact Program Committee, Faculty of Environmental Studies, York University, 4700 Keele Street, Downsview, Ontario, Canada M3J 1P3.

Publications

Center for Field Research

A new 16-page brochure, "A Guide to Funds and Volunteers for Field Research, 1977-78," describes how professional institutions and professional individuals may qualify to apply for grants and obtain the services of volunteer assistants in order to conduct scientific and cultural field expeditions.

The Center, which is located in Belmont, Massachusetts, reviews and evaluates the proposed projects and arranges for their sponsorship by nonspecialists who share the costs of the expeditions in order to work with research scholars in the field. Eligible disciplines include but are not limited to anthropology, archaeology, astronomy, biology, botany, cartography, conservation, ethnology, folklore, geography, geology, marine sciences, medicine, meteorology, musicology, ornithology, restoration, and sociology.

The brochure may be obtained from the Applications Office, Center for Field Research, 10 Juniper Road, Belmont, Massachusetts 02178.

**Bibliographic
Search Service**

A Handbook for the Introduction of On-Line Bibliographic Search Services into Academic Libraries, by David W. Wex, is a booklet recently published by the Office of University Library Management Studies (Occasional Papers, Number Four, June 1976). It is a set of recommendations for academic libraries that wish to add computer-based bibliographic search services to their existing services. The recommendations are based on work by the Northeast Academic Science Information Center (NASIC). They cover such library concerns as staffing, training, organization, costs, impact on traditional library services, and the logistics of delivering on-line search services. For more information write: Office of University Library Management Studies, Association of Research Libraries, 1527 New Hampshire Avenue, N.W., Washington, D.C. 20036.

**New from
Southern Regional
Education Board**

Community College Staff Development: Basic Issues in Planning, by Charles S. Claxton, \$1.00; *Faculty Evaluation Procedures in Southern Colleges and Universities*, by James E. Boyd and E. F. Schietinger, \$2.00; *Faculty Development Centers in Southern Universities*, edited by Mary Lynn Crow, Ohmer Milton, Edmund Moomaw, and William R. O'Connell, Jr.; and *Developmental Approaches to the Teaching of Science and Mathematics: Case Studies Report*. For more information write to the Southern Regional Education Board, 130 Sixth Street, Atlanta, Georgia 30313.

**Science and
Social Issues**

Science and Social Issues: Stimulating Discussion and Involvement is a new publication which describes and analyzes an experiment in communication and involvement in the context of science and social issues. It is a report of the use of a computer and questionnaire technique and an electronic dialogue system to stimulate discussion and involvement at the 1975 AAAS Annual Meeting in New York City.

The social issues included: social responsibility of scientists and engineers; utilization of energy and questions of economic growth; formulation of a national health policy; government policy towards the support of science; world population issues; and the ability of mankind to manage better its affairs during the next thirty years.

For a copy of the report write to: AAAS Office of Special Programs, Department SEN, 1776 Massachusetts, N.W., Washington, D.C. 20036.

Environmental Education

**North American
Regional Seminar**

Environmental needs in Canada and the U.S. were the focus of the 1976 North American Regional Seminar on Environmental Education held on 5-8 October in St. Louis, Missouri.

Five central themes, reflecting environmental needs identified at the 1975 Belgrade International Workshop, ran throughout the meeting: non-institutional environmental education (in the community, business, industry, and government); environmental education through the media; environmental education in colleges, universities, and adult education; environmental education in grades K-12; and action strategies to improve environmental education.

One of eight regional meetings sponsored by UNESCO/UNEP (United Nations Environment Program) the seminar was organized by the Alliance for Environmental Education to provide a means for reviewing, evaluating, and implementing the Belgrade recommendations. Action programs that were reviewed included UNESCO/UNEP pilot projects and ongoing environmental education programs within the region, with a major goal the identification and planning of pilot projects and programs aimed at the solution of problems deemed most critical by participants.

Environmental education professionals and resource people from government, industry, universities, and the media provided input for policy recommendations to be considered at the Cabinet level in 1977 and discussed materials and technologies with the more than 50 exhibitors who attended.

A survey to establish priorities was designed in preparation for the seminar in which respondents from a broad spectrum of concerned citizens were asked to assume the role of foundation administrator with \$1,000,000 to allocate among 30 program proposals. An analysis of the survey's responses provided a basis for discussion for the seminar's 500 participants.

For additional information write to James L. Aldrich, Executive Director, The Alliance for Environmental Education, 1785 Massachusetts Avenue, N.W., Suite 113, Washington, D.C. 20036.—Adapted from *Intercom*, the international newsletter on population of the Population Reference Bureau, 1754 N Street, N.W., Washington, D.C. 20036.

**Updated Energy
Plan from ERDA**

A National Plan for Energy Research, Development, and Administration: Creating Energy Choices for the Future is the summary report of a national energy plan recently published by the Energy Research and Development Administration (ERDA). It is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Stock Number 052-010-00479-4. Price 40 cents. (There is a minimum charge of \$1.00 for each mail order.)

**Energy, Water,
and the West**

Energy, Water, and the West, edited by Elizabeth R. Gillette, is a report of a workshop which focused on the impact of energy development on western water resources. The workshop was co-sponsored by the AAAS and the National Conference of State Legislatures on 2-5 November 1975. Copies of the report may be ordered for \$5.00 from the National Con-

ference of State Legislatures, Office of Science and Technology, Executive Tower Inn, 1405 Curtis Street, Denver, Colorado 80202.

Regional Energy Planning

The AAAS Division of Public Sector Programs has recently published *End-Use Regulation:*

Beginning the Debate, edited by Gretchen Vermilye and William A. Blanpied. The booklet contains the proceedings of a seminar of the same name held on 14 October 1975 in Chanhassen, Minnesota. Participants in the seminar explored the implications of employing various schemes for the end-use regulation of energy as well as the efficacy of end-use regulation itself as a major component of a rational regional energy plan. The AAAS and the Minnesota Energy Agency jointly sponsored the seminar.

Also edited by Gretchen Vermilye and William Blanpied is a report entitled *Case Studies in Regional Energy Planning*, which contains papers presented at the 1976 Annual Meeting of AAAS in a symposium that summarized a series of three seminars on "National Energy Policy in a Regional Context," which was organized by AAAS.

Both of these publications are available without charge from the AAAS Division of Public Sector Programs, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Energy Conservation in Schools

The Economy of Energy Conservation in Educational Facilities is an 82-page publication of Educational Facilities Laboratories,

which discusses energy conservation strategies for schools in three phases: operational improvement in existing schools, modernization of existing structures, and new construction. It is available from EFL, Inc., 477 Madison Avenue, New York, New York 10022.

International

Shift in Higher Education Policy in Sweden

In July 1977 an educational reform bill, primarily aimed at changing higher education (Högskola), will take effect. The over-

all objectives of this reform are to make higher education more readily available to the average working person, to tailor student enrollment and selection of degree programs to economic needs, and to change the educational management structure.

The general philosophy expressed in the reform is that higher education should be designed to promote personal development, greater affluence, democracy, internationalization, and to produce persons who readily can be integrated into society. The policy of the Högskola will be guided both by society's demand for skilled labor and by the educational needs of the individual, with the number of students admitted being determined by the resources and the availability of jobs which society is capable of providing. —From 31 May 1976

issue of *European Scientific Notes*, Office of Naval Research, London.

Science and Technology Education Newsletter

The *Science and Technology Education Newsletter* provides a forum for the interchange of views, ideas and information on science and technology education

at all levels among persons working in Africa. It also carries news and information drawn from the wider world community, when these relate to Africa.

The newsletter appears twice a year as a collaborative effort between the science and education sectors of UNESCO and particularly between the UNESCO Regional Office of Science and Technology for Africa (Nairobi) and the UNESCO Regional Office for Education in Africa (Dakar). —*Science and Technology Education Newsletter*, UNESCO Regional Office of Science and Technology for Africa, P.O. Box 30592, Nairobi, Kenya.

INTERCIENCIA

The journal INTERCIENCIA is a unique venture in communication among the scientific communities of the Western Hemisphere.

Concerned with the growth and understanding of science in all the Americas and in other countries, its focus is particularly on Latin America and the use of science and technology to promote human welfare.

INTERCIENCIA is addressed to scientists, engineers, technologists, development planners, educators and others who share a common interest in the relevance of science to the solution of human problems and in utilizing scientific efforts to serve the development process.

For further information write INTERCIENCIA, P.O. Box 19315, Washington, D.C. 20036.

VIIth General Assembly of ICC

The VIIth General Assembly of the International Coordinating Committee for the Presentation

of Science and the Development of Out-of-School Scientific Activities (ICC) will be held at Cairo, Arab Republic of Egypt, 22-27 November 1976, at the invitation of the Egyptian government. The general topic to be dealt with is the training of leaders.

This General Assembly is being held in conjunction with two other international activities: the UNESCO Regional Seminar for the improvement of science and technology education at the pre-university level, including out-of-school science and technology education; and the Pan-Arab Youth Science Fair for youths from Arab countries, Middle East and ICC member countries.

In the framework of these events, the organizers have planned the creation of an information center to display photographs, publications, reports, audiovisual materials, science kits, and other materials emphasizing the development of out-of-school science and technology education and of activities of science clubs, camps, and fairs.

For further information write to Salah Galal, Chief Science Department, Al-Ahram N.P., El-Galaa Street, Cairo, Arab Republic of Egypt.

New Journals

Bioethics Digest

The Bioethics Digest is a new comprehensive publication that centers on current developments in bioethics. It contains a collection of informative summaries abstracted from the most relevant and pertinent literature available on topics in bioethics. Over 3,000 articles, books, monographs, and other sources of information concerned with the field of bioethics are screened, and 200 are selected each month and presented in abstracted form. These summaries, written in an informative and impartial manner, deal with such topics as behavior control, death and dying, human experimentation, genetics research, medical technology, population control, and health care delivery.

The *Digest* will also periodically feature a full-length article highlighting the latest or most dramatic development relating to bioethics or a new ruling or guideline issued by Congress or the U.S. Department of Health, Education, and Welfare that may impact the medical community and the general public. Additional

features will include bioethical opinions written by noted experts in the field.

The subscription rate is \$48.00 per year for 12 issues. For more information write to the *Bioethics Digest*, P.O. Box 6318, 5632 Connecticut Avenue, N.W., Washington, D.C. 20015.

Journal of Marine Education

The Journal of Marine Education is a new quarterly journal designed to support the introduction of marine oriented instruction into every subject in the classroom, including social studies, the arts, history, literature, science, and mathematics. It is supported by the Institute for Marine and Coastal Studies of the University of Southern California and Sea Grant, University of Hawaii. Articles emphasize teaching the impact of the earth's water system on our ever-changing life-styles.

The *Journal of Marine Education* offers lesson plans and teaching aids for creative in-classroom programs. A special tear-out section will allow teachers to customize their classroom programs. The journal is not copyrighted. Teachers are encouraged to photocopy or reproduce instructional materials. For more information write: *Journal of Marine Education*, P.O. Box 3085, Newport Beach, California 92663.

Journal of Personalized Instruction

The Journal of Personalized Instruction is intended to be an international, user-oriented, multidisciplinary journal for the publication of articles and communications that contribute to the analysis and improvement of personalized instruction. The journal will publish experimental research reports, case study and descriptive reports, theoretical and methodological papers, review articles, and abstracts and technical notes. Each issue will also contain an annotated listing of articles dealing with personalized instruction that have recently appeared in other journals.

The first two issues of the journal were published in March and September 1976. Beginning in March 1977 it will be published quarterly on a calendar-year basis. For more information write to *Journal of Personalized Instruction*, Room 29, Loyola Hall, Georgetown University, Washington, D.C. 20057.

Museum Scope

A new bimonthly publication, *Museum Scope*, will contain some articles dealing with the scope of museum activities in a particular city and some dealing with display techniques, preservation materials, personnel changes, book reviews, and so on. The museums in each city will be invited to join in making the "City Features" interesting forums for presenting ideas and projects tried by each institution. Because museum people help write the articles, the journal should have a broad range of support and cover broad interests. The first issue features Memphis, Tennessee, and the second one, Topeka, Kansas.

Museum Scope is free to the director of each quali-

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fied museum in the United States (nonprofit, educational institutions and/or listed in the *Official Museum Directory* of the American Association of Museums). For further information write to Alden Redfield, Suite 5, Strollway Centre, 111 South 9th Street, Columbia, Missouri 65201.

Opportunities

NSF Grants to Aid Women in Science

The National Science Foundation has awarded \$946,171 to support two types of projects designed to develop and test methods to attract and retain women in scientific careers. The NSF grants include \$203,125 to support 22 science career workshops in 17 states, and \$743,046 for 11 science career facilitation projects in ten states and the District of Columbia.

In the workshop program about 6,000 undergraduate and graduate women will attend one- or two-day sessions designed to encourage them to consider careers in science, to advise them on how to prepare for such careers, and to provide information about job opportunities in the various fields of science.

The career facilitation project is aimed at women who received bachelor's or master's degrees in science between two and 15 years ago and who are not presently employed in the fields for which they are trained. Two of the science career awards will be in fields of engineering, two in chemistry, one in mathematics, one in computer science and five in interdisciplinary fields. About 350 women are expected to participate in these projects with the largest number, 50, to be selected by the Polytechnic Institute of New York for a project in polymer science and engineering.

Lack of Mathematics a Constraint

The minimal high school mathematics requirement for admission to the standard freshman calculus sequence is two years of algebra, a year of geometry, and a half year of trigonometry. This sequence is a requirement for the undergraduate curricula in the agricultural sciences, chemistry, engineering, environmental design, forestry and conservation, optometry, most of the biological sciences including pre-medicine, and economics. It is increasingly necessary for sophisticated graduate work in psychology, political science, and sociology.

In a systematic random sample of applicants for fall 1972 admission at the University of California at Berkeley, 57 percent of the men had taken two years of algebra, a year of geometry, and half a year of trigonometry, compared with 8 percent of the women. This 49 percentage point difference is a powerful measure of sex-role stereotypes which constrain the aspirations and motivations of students deciding what courses to take in high school, even as they constrain the kinds of advice counselors give students.—Quoted in the 15 July 1976 issue of *Intellectually Talented Youth Bulletin*, from a paper, "Constraints on Minorities and Women in Higher Education," by Lucy W. Sells. (ITYB, P.O.

Box 1360, Johns Hopkins University, Baltimore, Maryland 21218.)

Infinity Factory

Infinity Factory, a new television series to help children learn mathematics, began on 20 September over PBS. It is designed for children 8 through 11, especially Blacks and Latinos. Programs combine innovative approaches to mathematics with alertness to the needs and perceptions of minority children.

Mathematical aims are to improve children's attitudes toward mathematics by showing that there is more to math than just arithmetic, and by demonstrating how mathematics can be useful in everyday life. The series instructs in six main topic areas: decimal number system, measurement, estimation, mapping and scaling, graphing, and certain techniques for solving problems.

Ethnic aims are to help minority children maintain strong positive feelings about their own ethnic backgrounds, and to help all children understand and appreciate one another's lifestyles and cultures. Programs will portray positive and realistic Black and Latino role models, urban lifestyles, positive and strong male/female role models—non-stereotypes, minority contributions to our American past, and human concerns.

The Education Development Center in Newton, Massachusetts, produces the series. The executive producer is Jesús Salvador Treviño. Senior advisor to the project is Jerrold Zacharias.

For program guides or other information write to Education Development Center, 55 Chapel Street, Newton, Massachusetts 02160, or Public Television Library, 475 L'Enfant Plaza West, S.W., Washington, D.C. 20024.

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